



[10191/2370]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Heinz LUFT : Examiner: Christopher S. Kim  
For: FUEL INJECTOR AND METHOD :  
FOR ITS ADJUSTMENT : Art Unit: 3752  
Filed: August 21, 2002 :  
Serial No.: 10/089,668

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REPLY BRIEF TRANSMITTAL

SIR:

Accompanying this Reply Brief Transmittal is a Reply Brief pursuant to 37  
C.F.R. § 41.41 for filing in the above-identified patent application

While no fee is believed to be due, the Commissioner is authorized to charge,  
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Respectfully submitted,

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Dated: 4/24/06

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
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PATENT & TRADEMARK OFFICE

Examiner: Christopher S. Kim

Art Unit: 3752

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**SIR:**

Appellants submit the present Reply Brief in response to the Examiner's

Answer dated

In accordance with 37 C.F.R. § 41.37, this brief is submitted in support of the appeal of the final rejections of claims 26 to 29. For at least the reasons set forth below, the final rejections of claims 26 to 29 should be reversed.

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**DERVIS MAGISTRE  
KENYON & KENYON LLP**

## REMARKS

Appellant still is unable to follow the Examiner's argumentation because the Examiner's claims are absolutely untenable and the comments of the Examiner with respect to the subject matter known from Boecking are totally erroneous in their interpretation. The most recently submitted Claim 26 is in no way anticipated by the document by Boecking. Claim 26 states that a restoring spring 23 pressing against a valve needle 3 has a pre-stress applied to it by a sleeve 24 and an adjusting body 40 is situated in the sleeve 24 so as to be adjustable so that a fuel amount flowing through the fuel injection valve 1 per unit of time depends on the position of the adjusting body 40 in sleeve 24, the adjusting body 40 being fasted in direct contact with sleeve 24 ("... a sleeve to pre-stress the restoring spring; and an adjusting body placed in direct contact with the sleeve so as to be adjustable so that a fuel amount flowing per unit of time through the fuel injector depends on a position of the adjusting body in the sleeve."). None of the aforementioned features can be gathered from the common rail injector of Boecking. Rather, this common rail injector has a sleeve 16 axially movable in a nozzle needle 5, which is pressed by a nozzle spring 12 against the injector housing 1. Thus, the sleeve 16 is precisely not used to adjust the spring tension of the nozzle spring 12. Rather, in Boecking, the sleeve 16 is able to move against the tension of the nozzle spring 12 (!). The Examiner asserts that Appellants are alleging the sleeve 16 to be fixed and rigid. However, sleeve 16 is movable. This can also be thus gathered from the document by Boecking. By contrast, it is precisely sleeve 24 in the subject matter of the claimed invention which is situated in a fixed manner in the inner pole 13 following the adjustment of the spring force of the restoring spring 23, while the adjusting body 40, however, is movable within sleeve 24. By his argumentation, therefore, the Examiner himself provides another differentiating feature of the subject matter of our application with respect to the subject matter by Boecking.

The Examiner in the Answer describes the upper, upstream part of the nozzle needle 5 as "sleeve 13". This upper part of nozzle needle 5 to be sure takes the form of a sleeve, but not in the least has it anything to do with the sleeve in the claim for applying a pre-stress to the restoring spring. The recited sleeve is a separate component independent of valve needle 3, which on one side presses against the restoring spring 23, while the other side of the restoring spring 23 rests against valve needle 3. To this extent, sleeve 24, restoring spring 23 and valve needle 3 are arranged in series, the restoring spring 23 thus being necessarily clamped

between the sleeve 24 and the valve needle 3. If, however, as claimed by the Examiner, the sleeve 13 in Boecking corresponds to the recited sleeve, the sleeve 13, however, is in turn unmistakably part of nozzle needle 5 (see Figures 1 and 2). How then is the sleeve 13 supposed to exert a pre-stress on the nozzle spring 12 so as to act as a restoring spring on the nozzle needle 5? This is simply impossible. The nozzle spring 12 is brought into a pre-stressed state only by being installed between the shoulder 13 of the nozzle needle 5 and the collar 17 of the sleeve 16, the nozzle spring 12 acting to this extent as a restoring spring on the nozzle needle 5 including shoulder 13 (or as the Examiner claims "sleeve 13") in the closing direction of the nozzle.

The nozzle spring 12 in Boecking is of course pre-stressed. It is also correct that the nozzle spring 12 acts as a restoring spring for the nozzle needle 5. An adjustment of the spring tension of the nozzle spring 12 via the sleeve 16 is not possible, however, let alone via the sleeve-shaped section 13 of the nozzle needle 5 since both components are able to be shifted in the opposite direction through the nozzle spring 12. The axially movable sleeve 16, after all, is pressed by nozzle spring 12 precisely against the injector housing 1. But in no way does sleeve 16 exert a pre-stress on the nozzle spring 12. Thus, there is a completely different functional principle. In the subject matter of our application, it must precisely be absolutely avoided that sleeve 24, due to the spring force of the restoring spring 23, sidesteps away from the valve needle 3 in its opening direction. This would completely annul the functioning of the valve. The arrangement as a whole thus does not correspond to the arrangement according to the present invention. Let alone does Boecking in any form provide for an adjusting body in sleeve 16, which is arranged so as to be adjustable, such that a fuel amount flowing through the fuel injector valve per unit of time is dependent on the position of the adjusting body in the sleeve 16. Since no adjusting body is provided at all, of course, the feature that "the adjusting body 40 is fastened in direct contact with sleeve 24" cannot in any way be anticipated by Boecking.

Respectfully submitted,

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